

Until recently, says Plewa, the literature in this area has suggested that bound residues exhibit little bioavailability when consumed by animals, so the "traditional idea is don't worry about them; it can't hurt you." However, recent studies demonstrated that scientists may be severely underestimating the bioavailability of these residues, with implications for risk assessment.

Studies published in the *Journal of Agricultural and Food Chemistry* showed 66% of chloroaniline (a model xenobiotic)—lignin metabolites were released as simple chloroaniline derivatives after passage through the rat gastrointestinal tract, and 11–20% of bound residues was released from 3,4-dichloroaniline–lignin isolated from wheat plants that were fed to rats and lambs. According to Plewa, these studies indicate that "the toxicity [of the metabolite] could be released. It isn't just tied up and disappears." There appears to be a wide range in the bioavailability of xenobiotics bound to insoluble plant fractions.

This range in bioavailability raises questions that may have great impact in the future for environmental toxicology. Plewa says that plants are being bombarded with materials. What isn't known is the capacity of plants to serve as a sink. Is it possible to saturate this sink so that plants cannot further absorb and metabolize chemicals to stable, insoluble forms, and if so, will plants then release what they can't absorb, damaging the biosphere? In addition, Plewa states that if current risk assessments are based on the amount of residue that is not bound, then a change in that estimate could have a radical effect: "You don't need to alter too much of the equation before it shifts the risk assessment."

Healthy People 2000

The U.S. Public Health Service's success in establishing disease prevention and health promotion objectives for the nation should provide a base for President Clinton's health care reform program. Prevention of disease and promotion of healthful behaviors are cornerstones of the health care reform package, which will likely include environmental health among its priorities.

In September 1990, PHS issued *Healthy People 2000: National Health Promotion and Disease Prevention Objectives*. The document sets specific goals for health promotion, disease prevention, and health protection in 21 critical areas. It also calls for the creation of data and surveillance systems to track progress toward the goals. An ad hoc working group chaired by staff from NIEHS and CDC established 16 environmental health objectives. Experts from academia, local, state, and federal reg-

ulatory and health agencies and health care providers served on the working group.

The environmental health objectives set ambitious targets for reducing environmentally related diseases and conditions such as asthma, mental retardation, waterborne diseases, and lead poisoning. Other goals include reducing pollution of indoor and ambient air, improving drinking and surface water supplies, and cleaning up hazardous wastes sites. Pollution prevention goals address solid waste air toxics and community-

based recycling. The working group also sets goals for state and local programs for residential testing for lead paint and radon and developing construction standards for new homes to prevent accumulation of radon gas.

NIEHS and CDC have been assigned the tasks of developing strategies to attain the environmental health objectives and of tracking progress toward the goals. However, the implementation of the programs to achieve the objectives is shared by federal, state, and local agencies, health care providers, voluntary and professional organizations, community groups, and individual citizens. A steering committee with representatives from these groups has been created to assist NIEHS and CDC in this national effort. Progress is already being made toward many of the goals. An exception is protection of drinking water and surface water: water quality has worsened in many locations during the two years since the objectives were set. The recent outbreak of waterborne disease in Milwaukee, Wisconsin, lends credence to the importance of these objectives to public health.

Voices in the Wilderness

Severe poverty, death threats, and imprisonment are just some of the obstacles overcome by this year's winners of the Goldman Environmental Prize, the largest international award program for grassroots environmentalists.

The Goldman Prize, awarded for "sustained and important efforts to preserve or enhance the environment," includes a \$60,000 award to allow the recipients to



Challenges. Lakota Indian JoAnn Tall has risen to the environmental challenges of Native Americans.

The Goldman Environmental Foundation



Sitting down at the table. Mayr brings Colombia's Kogis into an environmental alliance.

pursue their visions of a renewed and protected environment without financial constraints. The prize jury includes members of the Goldman Environmental Foundation and individuals such as Secretary of Interior Bruce Babbitt and Joan Martin-Brown, director of the Washington, DC, office of the United Nations Environment Programme. A network of 19 internationally known environmental organizations including the Sierra Club, National Audubon Society, National Geographic Society, Environmental Defense Fund, Natural Resources Defense Council, and a confidential panel of environmental experts from more than 30 nations nominates the winners, one from each of the six inhabited continents.

Asia: Dai Qing. The daughter of a revolutionary martyr, Qing, a former missile technician and one-time intelligence agent, is now a journalist in Beijing. Qing has openly and ardently opposed China's Three Gorges dam. The project, scheduled for China's Yangtze River, would force the resettlement of 1.2 million people, drown more than 100 sites of archaeological importance, and submerge a stretch of canyons known as Three Gorges. Taking great personal risk, Qing inspired dam opposition by compiling and publishing *Yangtze! Yangtze!* a collection of essays by prominent Chinese scholars critical of the dam. As a result, the project was shelved, at least temporarily.

Europe: Sviatoslav Igorevich Zabelin. In response to concern about the severe environmental problems facing the pre-democratic Soviet Union, Zabelin co-founded the Socio-Ecological Union (SEU), a coalition of 250 grassroots environmental organizations working in 11 of

the 15 former republics. Since 1991 Zabelin has been the chief assistant to Alexei Yablokov, advisor to Boris Yeltsin on ecology and health, working to draft environmental legislation to prevent exploitation of Russia's natural resources as the nation opens its borders to corporations from around the world.

North America: JoAnn Tall. Though suffering from debilitating rheumatoid arthritis, Tall has spent years working from the Pine Ridge Reservation in South Dakota to organize Native American people to prevent environmental abuses by corporations and governments on tribal lands. Tall co-founded the Native Resource Coalition in 1989 to educate indigenous communities about environmental threats. Some of her successful efforts include stopping nuclear weapons testing in the Black Hills and preventing location of a hazardous waste site on the Pine Ridge and Rosebud Reservations.

Africa: Garth Owen-Smith and Margaret Jacobsohn. Working from a remote area of newly independent Namibia known as "World's End," Smith and Jacobsohn have devised and implemented a unique two-way conservation system to combat poaching of black rhino and desert elephant populations using unarmed local herdsmen as guards. In contrast to the increasingly militarized response to poaching in other areas, the peaceful "community-based conservation development" plan is considered a model for African communities and has resulted in an increase in wildlife populations.

South/Central America: Juan Mayr. Despite working under volatile and dangerous conditions, including death threats, Mayr, a photographer turned journalist, has been successful in forging an environmental alliance between Colombian guerillas, peasants, and the Kogi, a pre-Colombian community. The Fundacion Pro Sierra de Santa Marta works to protect

the world's highest coastal mountain (18,947 feet above sea level) and its microcosm of biological diversity in which arctic, tundra, rainforest, and desert environments are imperiled.

Australia/Oceania: John Sinclair. For 20 years, Sinclair has helped define public interest law in Australia by challenging the government on environmental protection, particularly in regard to Fraser Island, the world's largest sand island, located off the coast of Queensland. Sinclair has succeeded in halting the environmentally damaging practices on the island of sand mining and logging the island's rainforest and in the process has raised public awareness of the island's importance. To date most of the island has been declared a national park, and in 1992 it was designated a World Heritage Site.

Dioxin and Ecological Risk Assessment

An interim report issued by EPA on April 23 states that residues of dioxin in fish from Lake Ontario have decreased over the past decade. Lake Ontario has contained the highest levels of dioxins of all the Great Lakes, but according to Phil Cook of the EPA in Duluth, Minnesota, the trend is the same for all the Great Lakes and most aquatic environments in general. "Lake Superior [dioxin] levels were not detectable in many fish . . . the levels were in the part per trillion range," said Cook. Cook added that dioxin levels in fish depend on factors such as the age and fattiness of the fish, for example, and that the decreasing trend may not be true for all aquatic environments, but that "the trend has definitely been down." The interim report, which evaluates the data on dioxin and the aquatic environment and associated wildlife, is the first step in a long-term program to reassess the ecological risks of dioxin.

Evaluating the risks of dioxin to the environment is one part of EPA's reassess-

ment program. A health risk characterization, resulting from a reevaluation of data on human health and exposure, will be submitted to EPA later this year.

The interim aquatics report focuses on the bioaccumulation of dioxin in the aquatic environment and discusses issues related to risk characterization. Specific findings of the report are:

- For aquatic organisms, the reproductive system is the most sensitive to the effects of dioxin, resulting in early mortality, especially in fish.
- Of nonaquatic wildlife, fish-eating mammals and birds are the most susceptible to the effects of dioxins, but data on these dietary relationships are limited.
- Significant uncertainties remain concerning levels of dioxin in aquatic environments because exposures occur through water, sediment, and diet.

EPA will sponsor an expert panel workshop later this year which will evaluate the data and methods in the interim aquatics report for use in ecological risk assessment. A final report from this workshop, incorporating research now in progress, will be published in 1995.

EPA recently used concepts similar to those in the interim aquatics report to formulate criteria for dioxin under the Great Lakes Initiative. The period for public comment on the Great Lakes Initiative proposal closes in mid-September.

Pollution Auction

For sale: Acid rain. Cheap. Contact EPA. The EPA didn't actually advertise its first-ever auction of pollution allowances in this way. Nevertheless, more than 150 bids were made on March 29, amounting to over \$21 million, at the Chicago Board of Trade's auction of the rights to emit sulfur dioxide, the main component of acid rain.

The CBOT held the auction on behalf of the EPA, which is responsible for administering a national market-based pro-

Is dioxin decreasing? The flow of toxic effluent through the aquatic food chain.

